



Office de la Propriété
Intellectuelle
du Canada
Un organisme
d'Industrie Canada

Canadian
Intellectual Property
Office
An agency of
Industry Canada

CA 2396856 A1 2004/02/05

(21) 2 396 856

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2002/08/05

(41) Mise à la disp. pub./Open to Public Insp.: 2004/02/05

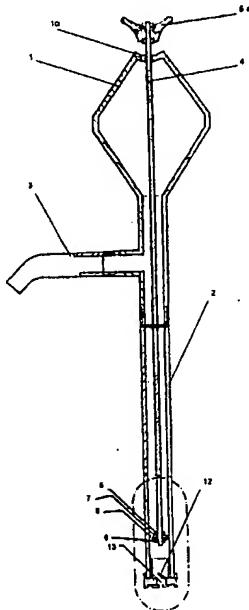
(51) Cl.Int.⁷/Int.Cl.⁷ F04B 9/14

(71) Demandeur/Applicant:
PETROVAS, ILIAS, GR

(72) Inventeur/Inventor:
PETROVAS, ILIAS, GR

(74) Agent: ROBIC

(54) Titre : POMPE A PISTON MANUELLE POLYVALENTE
(54) Title: MULTIPLE USE HAND OPERATED PISTON PUMP



(57) Abrégé/Abstract:

The multiple use hand operated pump consists of a rhomboid head (1), a mountable curve shaped outlet part (3), a pumping part (2) with a special base (9) bearing valve (12) and a liquid inlet (13). A piston (4) with external grip (5a) on its upper end and an especially constructed valve (5,6,7,8) on its lower end, as well as a tapered component (14). constituting means of supporting , stabilising and mounting of the pipe part (2) of the pump on any liquid container .

Canada

<http://opic.gc.ca> · Ottawa-Hull K1A 0C9 · <http://cip.gc.ca>

OPIC · CIPO 191

OPIC  CIPO

ABSTRACT

The multiple use hand operated pump consists of a rhomboid head (1) ; a mountable curve shaped outlet part (3) ; a pumping pipe part (2) with a special base (9) bearing valve (12) and a liquid inlet (13) . A piston (4) with external grip (5a) on its upper end and an especially constructed valve (5,6,7,8) on its lower end ; as well as a tapered component (14) constituting means of supporting ,stablelising and mounting of the pipe part (2) of the pump on any liquid container .

MULTIPLE USE HAND OPERATED PISTON PUMP

The present invention relates to a hand operated piston pump having a multiple use possibility, that is invented and at first supplied in the market by exclusively and only me .

5 Prior art has to demonstrate pumps as such ,the majority of which have serious dissadvantages making their use difficult ,time delaying and ineffective .

10 Said prior art dissadvantages result because of the presence of only a single part of pipe constituting the main pump body , as well as their constructive details.

15 Specifically ,the simple bearing no support means pump possesses the dissadvantage of absence of support and stabilisation of any kind on the container mouth, as there usually exists a diameter difference between the container mouth and the pump part immersed into the liquid to be pumped and it is because of this that the user is faced up with the problem to either have help or hold the pump tight and steady with one hand ,at the point where the pump pipe is in contact with the container mouth and carry out pumping with the other hand , with this resulting to a time delaying and tiring process .

20 Referring to pumps bearing a fixed support means on the liquid container mouth ,has to be pointed out that 25 their use is restricted to containers of certain height only ,because as it is obvious said fixed support means limitates the pipe length to that part immersed into the container of larger diameter ,with this resulting to incomplete pumping in case that said pump is used for containers of larger diameter ,for the reason that access of the pump pipe in so far as the container bottom ,would be impossible .

30 With this invention is presented a hand operated piston pump,that eliminates all dissadvantages of all known prior 35 art pumps,as the details and characteristics constituting

it, widen its use further for liquid pumping from different height and capacity containers and moreover for other uses such as cleaning of swimming pools, garden ponds and fountains , sea vessels,etc and they ensure stable ; fast, 5 easy and complete liquid pumping .

An important constructive detail of the hand operated pump of the invention is that it bears a rhomboid head for liquid storage during pumping , with this resulting to non-interrupting entirely the feeding of pumped liquid towards the outlet point with continuous reciprocating motion , as well as the possibility of air escape through the outlet points on one hand and the pumping time reduced by half as compared with the pumping time required for the same amount of liquid using a prior art pump on the 10 other . 15

A further important constructive detail of the hand operated pump of the invention is that it bears a valve system constituted by two parts - a piston valve and a base flap valve- ,so that in combination with the simultaneous 20 operation of both faster , more effective and much greater liquid pumping possibility is achieved .

Moreover another constructive detail of said pump is that it bears a properly formed additional tapered pump support component on the liquid container mouth , having 25 also the possibility of being attached and stabilised on a container mouth of any diameter dimension and said tapered component bearing a properly formed pump pipe housing, allowing the stabilisation of the hose in proper place ,as well as its adjustment for increasing-decreasing the pump 30 pipe immersed into the liquid ,in order that access to any height of liquid surface is achieved ,so that complete pumping is carried out .

The use of the hand operated pump of the invention can be widened to the cleaning of swimming pools ,garden ponds 35 fountains ,etc , from any kind of dirt , by simply applying a special dirt retaining filter at the outlet point ,

whereas in another embodiment it may bear an oblong flexible pipe for liquid transfer to other containers .

The object of this invention will be fully comprehended with reference to the drawings accompanying it ,where it is shown descriptively in a non-restrictive way as a whole and will all side details constituting it , where :

FIG.1 is a face view of the hand operated piston pump, bearing a tapered component .

FIG.2 is a section of the hand operated piston pump.

FIG.3 is a section of the detail of the inlet point and the valve system.

FIG.4 is a face view of the hand operated piston pump bearing no tapered component .

FIG.5 is a face view of the tapered component.

FIG.6 is a section of the tapered component.

FIG.7 is face view of the hand operated piston pump bearing a filter at the outlet point, and

FIG.8 is a face view of the hand operated piston pump bearing an oblong flexible pipe at the outlet point.

Specifically ,the hand operated piston pump is constituted by a main part with a rhomboid head (1),a pumping pipe part (2) ,the lower end of which bears a special base with a flap valve (12) at the liquid inlet point (13), which base (9) , is properly fixed at the lower end of the pipe part (2) by means of a housing ,created by an internal projection (10) and an external projection (11).The flap valve (12) having an opening-closing possibility at the liquid inlet point . A piston (4) bearing a grip (5a)on its upper external end and an especially constructed valve (5,6,7,8) on its lower end ,movable within the pipe parts (1)and (2), said valve being constituted by a main part-plastic membrane (8); an auxiliary mounting ring (7) , an upper lock valve support (5) and a lower lock valve support (6) .Externally ,at the pipe part (2) it bears a tapered component (14) for supporting ,stablelising and mounting of said pump pipe , having external support rings (15) for supporting of the pump on containers having various mouth diameter dimensions and a guide (16) for increasing-decreasing the pump

pipe part,immersed into the liquid ,as well as the pump
stablesing ,whereas at the outlet point (3)there is mounted
an additional curve shaped pipe part. Moreover for fur-
ther applications such as cleaning of swimming pools, gar-
5 den ponds ,fountains, sewage etc.,there is attached a dirt
retaining filter (17) , or alternatively for other kind of
use , such as the pumping from the internal of boats or ,
sea vessel engines , the tranfer of liquid from one stea-
dy fixed container to another spaced apart steady fixed
10 container ,etc there is attached an oblong flexible pipe
(18) .

It has to be mentioned at this point that the rhomboid
head of the pump , bears an opening (1a) for the insertion
and operation of the piston (4) , which opening (1a) has
15 such a diameter so that there exists a little gap ,allow-
ing air escape , with this resulting to storage ,additio-
nal feeding and directing of the liquid from said compart-
ment (1) towards the outlet point (3) during continuous
pumping .

20 Moreover the rhomboid shape of the head (1) in combi-
nation with the opening (1a) and the outlet point (3) crea-
te an open circuit ,ensuring much greater and faster pum-
ping possibility , for the reason that there exists a re-
taining and storage of a considerable amount of liquid
25 within the aforesaid rhomboid compartment(1) ,with this
resulting to the possibility of use of the pump in further
applications ,such as the water pumping from boats ,bar-
rels etc .

30 The valve system (5,6,7,8) ,the piston (4) and base
flap valve (9,10,11,12,13) , which could be characterised
as a composite operation system , ensures the pumping be-
cause it is achieved as follows :

35 During the first pulling of the piston (4) action in
an upwards direction , the air from the point (1a and 3)
of the rhomboid head (1) is removed , with this resulting
to simultaneous liquid inlet through the flap valve (12)
of the base .With continuing the reciprocating piston (4)
movement,pumping is thereon achieved mechanically by

means of the piston valve (5,6,7,8) , transferring the liquid towards the outlet point and storing some amount of liquid into said rhomboid compartment (1) at the same time , which liquid is finally discharged from the outlet mouth (3) .

5 It must be mentioned at this point that the hand operated piston pump of the invention is made of plastic , metal or any other suitable material available ,for eadible and drinkable liquids or for industrial and any other use liquids .

10 Furthermore , it has to particularly be emphasized that this description is based upon certain indicative and not at all limitative embodiments of the invention ,without making reference to exact total or partial dimensions - heights ,diameters etc. - which may be altered according to requirements of use each time .

15 Additionally , it has to particularly be emphasized that the shape of the tapered component for supporting , stablelising and mounting of the pump pipe onto the container mouth, as well as the dimensions of said tapered component may be altered , in order that there will the possibility of the pump mounting and pumping extensively, from any container ,having any mouth diameter dimension and any other than circular shape of mouth .

20 25 Conclusively , any modification of the object of the invention , as regards its total or partial dimensions as well as the dimensions of its additional components, of its components' shape or of its material of manufacture by any party will intend to copying and unfair competition , causing punishment as provided by Law .

30

CLAIMS

1.- Multiple use hand operated piston pump , characterised in that it consists of a main part with a rhomboid head (1) , a mountable curve shaped outlet part (3) , a pumping pipe part (2) with a special base (9) bearing a valve (12) and a liquid inlet point (13) . A piston (4) with external grip (5a) on its upper end and an especially constructed valve (5,6,7,8) on its lower end , as well as a tapered component (14) constituting a means of supporting ,stablelising and mounting of the pipe part (2) of the pump on any liquid container mouth .

2.- Multiple use hand operated piston pump ; as in claim 1 , characterised in that the special base (9) bears an especially formed housing of the pumping pipe (2) ,said housing formed by an internal projection (10) and an external projection (11) , so as to be fixed at the lower end of said pipe part (2) , whereas the valve (12) which is being fixed at the liquid inlet point (13) has an opening-closing possibility .

3.- Multiple use hand operated piston pump ; as in claims 1.an 2 , characterised in that the especially constructed valve that it bears at the lower end of the piston (4) consists of a main part-plastic membrane (8) ; an auxilliary mounting ring (7) ; an upper valve lock support (5) and a lower valve lock support (6) .

4.- Multiple use hand operated piston pump ; as in claims 1,2 and 3 , characterised in that the rhomboid head (1) bears an opening (1a) for the insertion and operation of the piston (4) ; said opening having such a diameter so that there exists a little gap , allowing air escape with this resulting to storage ,additional feeding and directing of the liquid from said rhomboid compartment (1) towards the outlet point (3) during continuous pumping.

5. - Multiple use hand operated piston pump , as in
claims 1,2,3 and 4 ; characterised in that the tapered com-
ponent (14) is a supporting, stablelising and mounting
means of the pumping pipe (2) ; with these being achieved
with rings (15) that give the possibility of supporting
and mounting of the pump on liquid containers having dif-
ferent diameter dimensions , whereas the guide (16) allows
increase-decrease of the immersed into the liquid pipe
part (2) as well as the stablelising of the pump at the
right place .

6. - Multiple use hand operated piston pump , as in
claims 1,2,3,4 and 5 , characterised in that its use can
be widened for cleaning of garden ponds, swimming pools,
fountains , sewage etc. , by adding a dirt retaining fil-
ter (17) at the outlet point (3) or alternatively for
other uses , such as pumping from inside of boats or sea
vessel engines , the transfer of liquid from one steady
fixed container to another spaced apart steady fixed con-
tainer ,etc , by adding of an oblong flexible piece of
20 pipe .

7. - Multiple use hand operated piston pump , as in
claims 1,2,3,4,5,6 and 7 , characterised in that the rho-
mboid head , in combination with the opening (1a) and the
outlet point (3) create an open circuit assuring a much
25 greater and faster pumping possibility due to retaining
and storage of a signigicant amount of liquid within said
romboid compartment (1)which finally feeds with extra li-
quid the outlet point (3) during the reciprocating movement
process of the piston (4) , resulting to the multiple use
30 adantage of the pump .

8. - Multiple use hand operated piston pump , as in
claims 1,2,3,4,5,6 and 7 , characterised in that the valve

system (5,6,7,8) , piston (4) and base valve (9,10,11; 12,13) , which could be characterised as a composite operation system ensures pumping , as follows.:

5 During the first pulling action of the piston (4) in an upwards direction , the air from the points (1a and 3) contained in the romboid head (1) is removed , with this resulting to simultaneous liquid inlet through the flap valve (12) of the base . With continuing reciprocating movement of piston (4) , pumping process is thereon achieved in an mechanical way by means of the valve (5,6,7, 8) of the piston (4) ,which tranfers the liquid towards 10 the outlet point , through the romboid head (1) , that finally comes out of the outlet mouth (3) .

15 9.- Multiple use hand operated piston pump , as in claims 1,2,3,4,5,6,7 and 8 , characterised in that it may be constructed in any total or partial dimensions of the components constituting it - height , diameters etc. - according to requirements of use each time .

20 10.- Multiple use hand operated piston pump , as in claims 1,2,3,4,5,6,7,8 and 9 , characterised in that the shape , design and dimensions of the tapered component (14) may be altered ; in order that there will be the possiblility of mounting and stablelising of the pump 25 in any container of different height and capacity as well as of different shape of mouth containers .

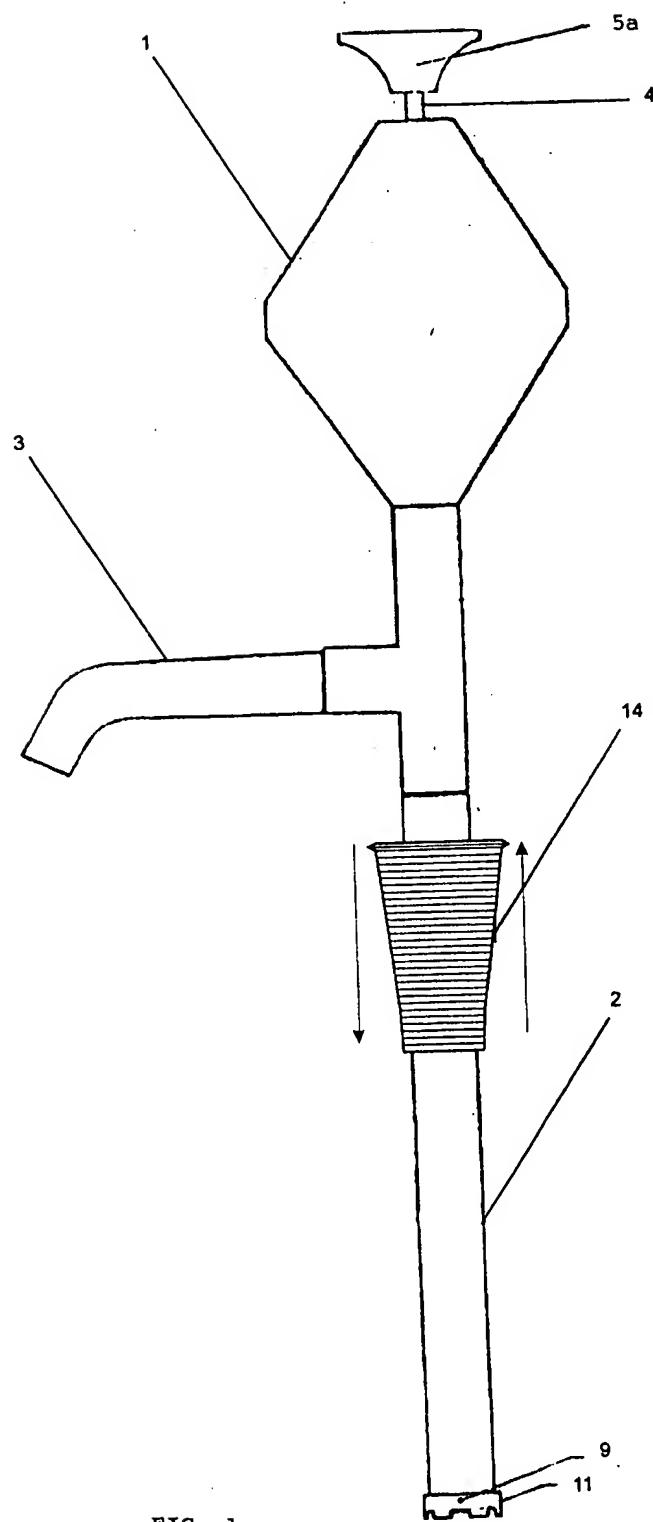
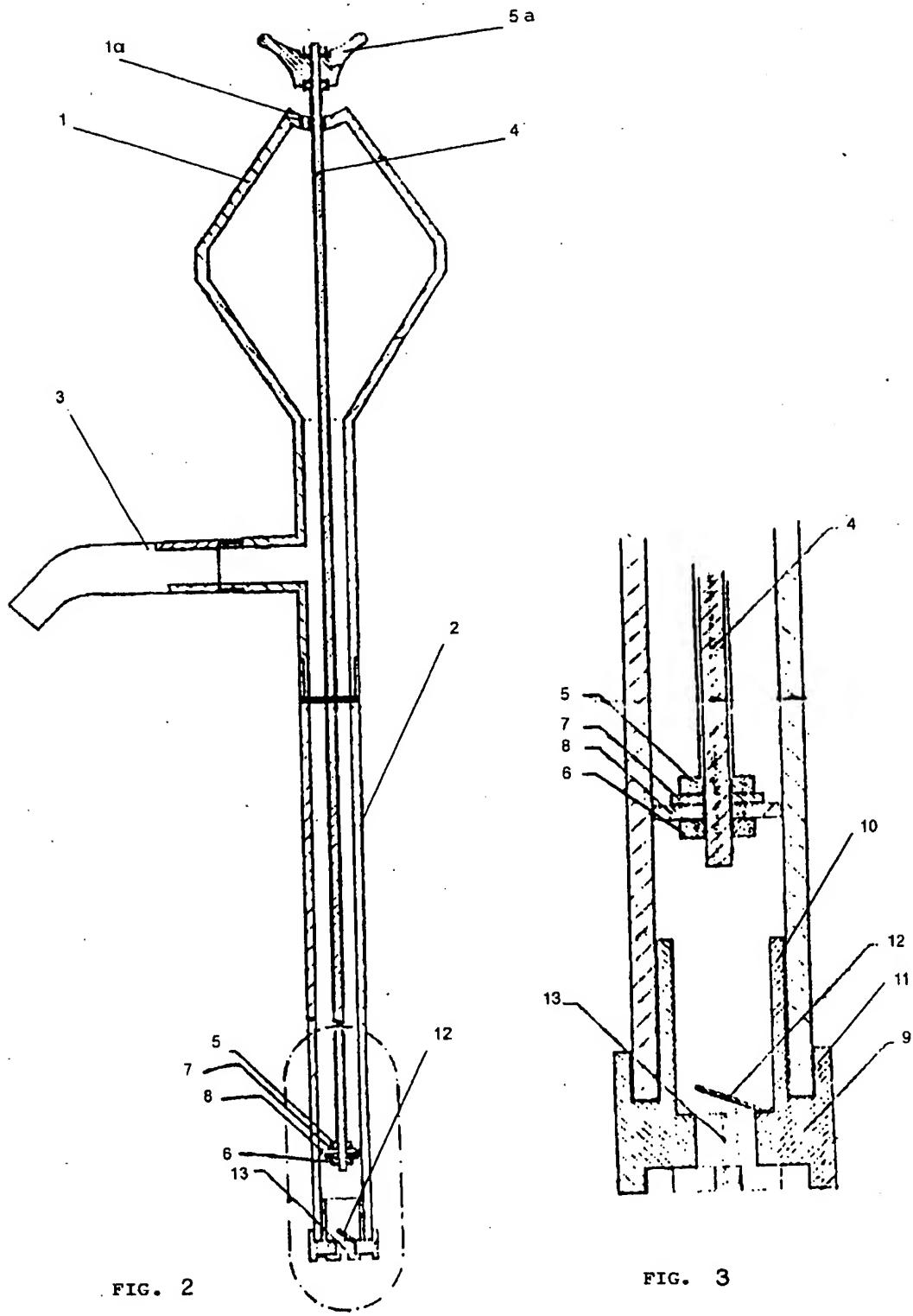


FIG. 1



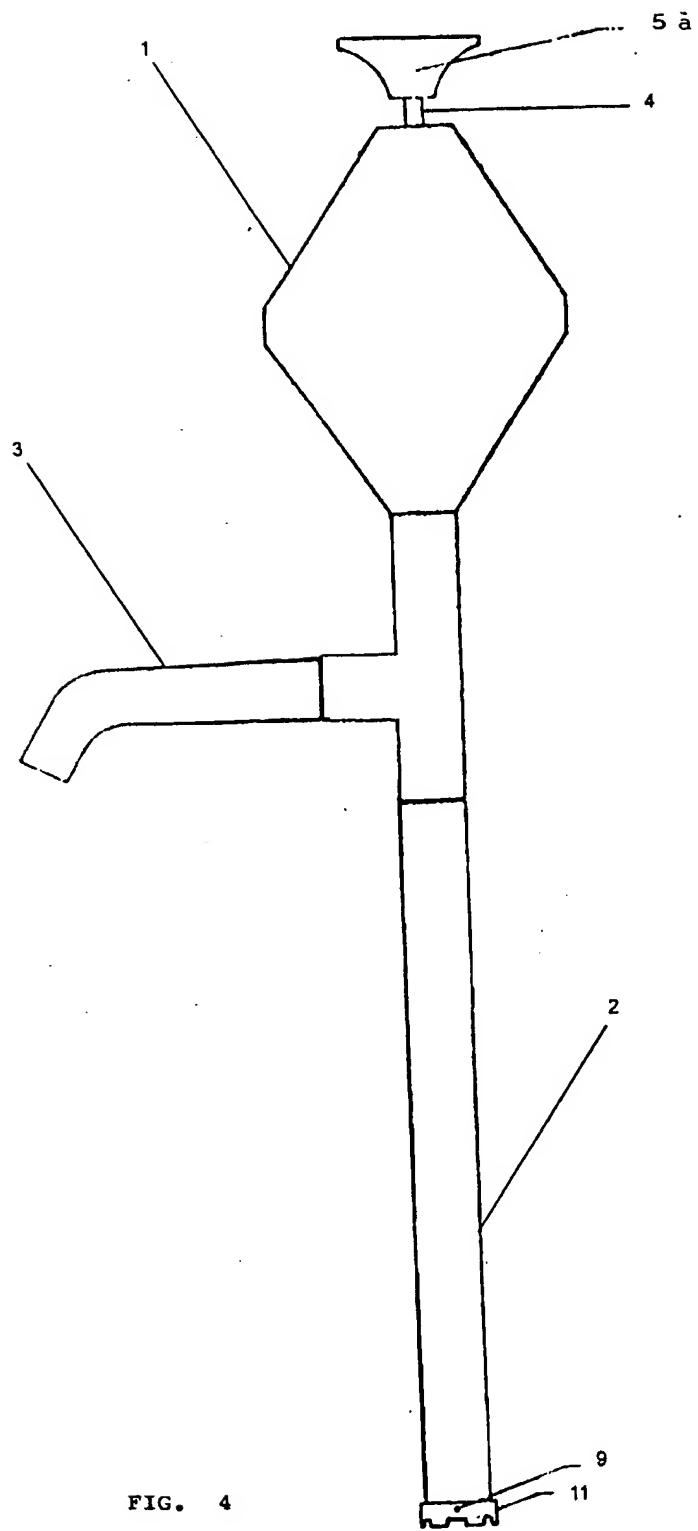


FIG. 4

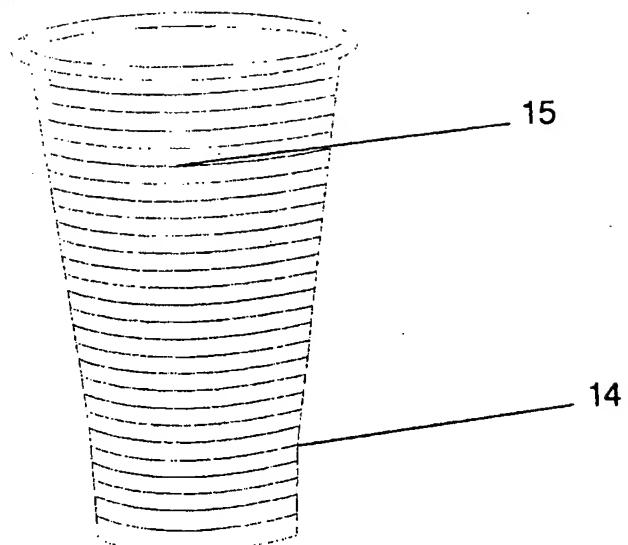


FIG. 5

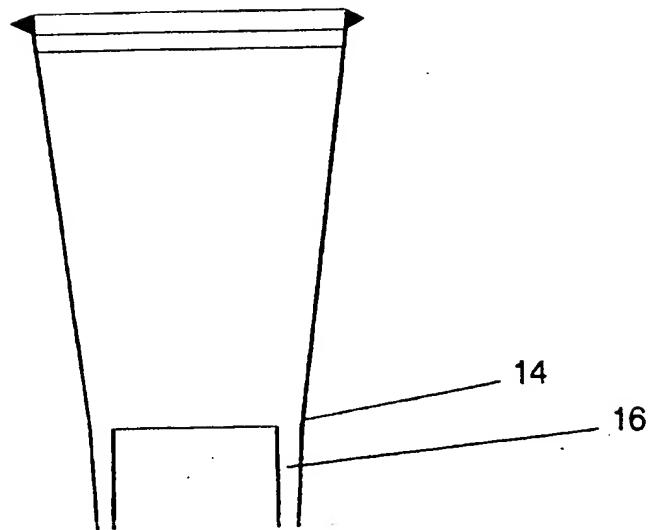
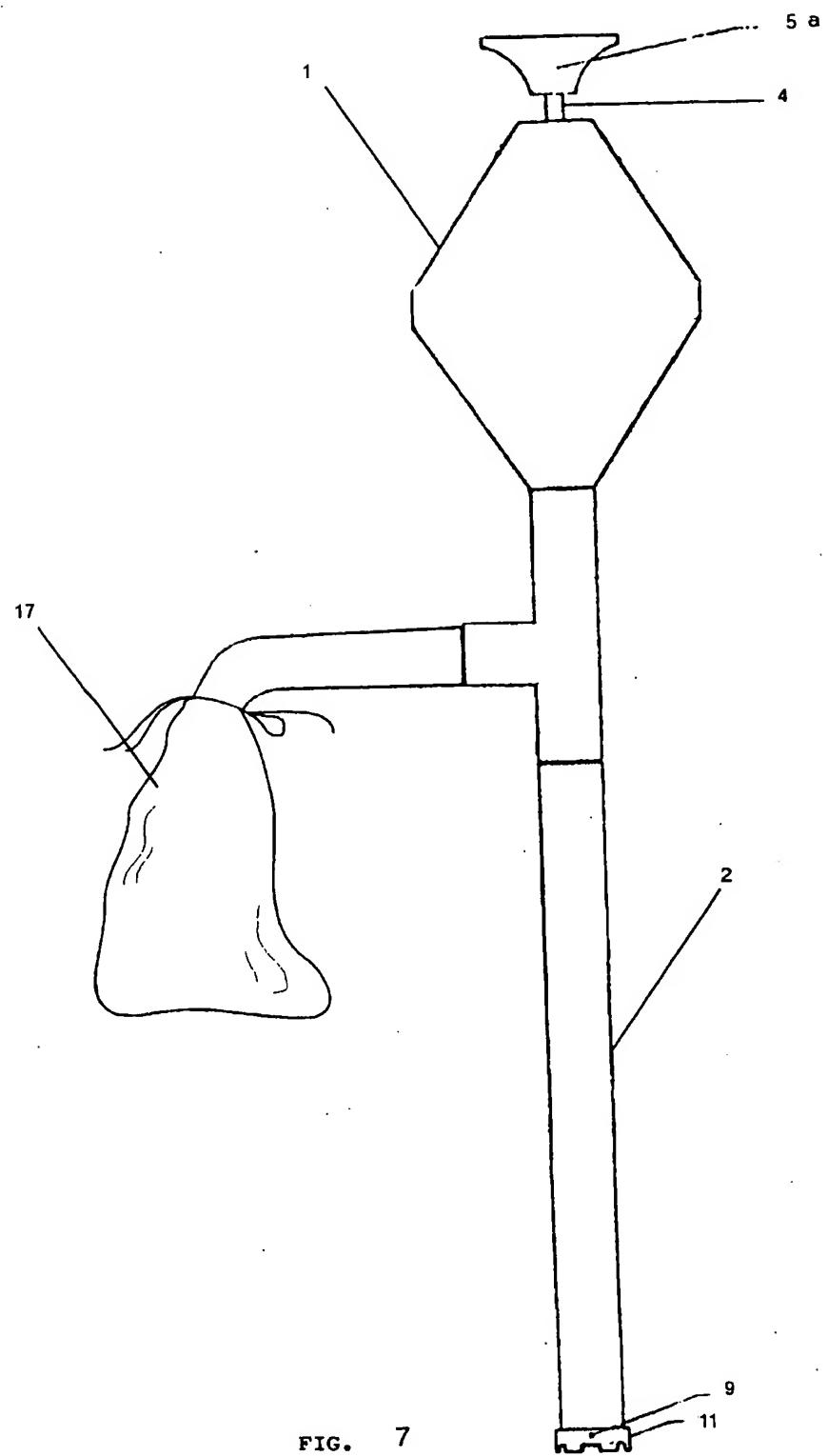


FIG. 6



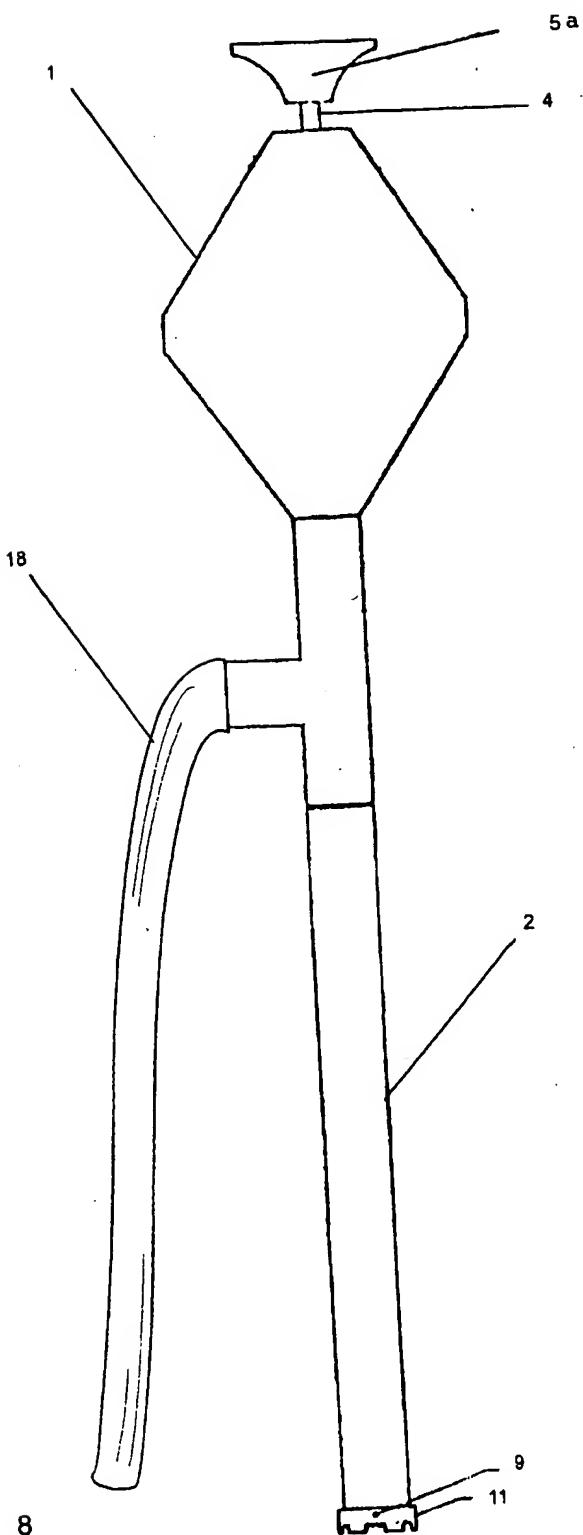


FIG. 8

